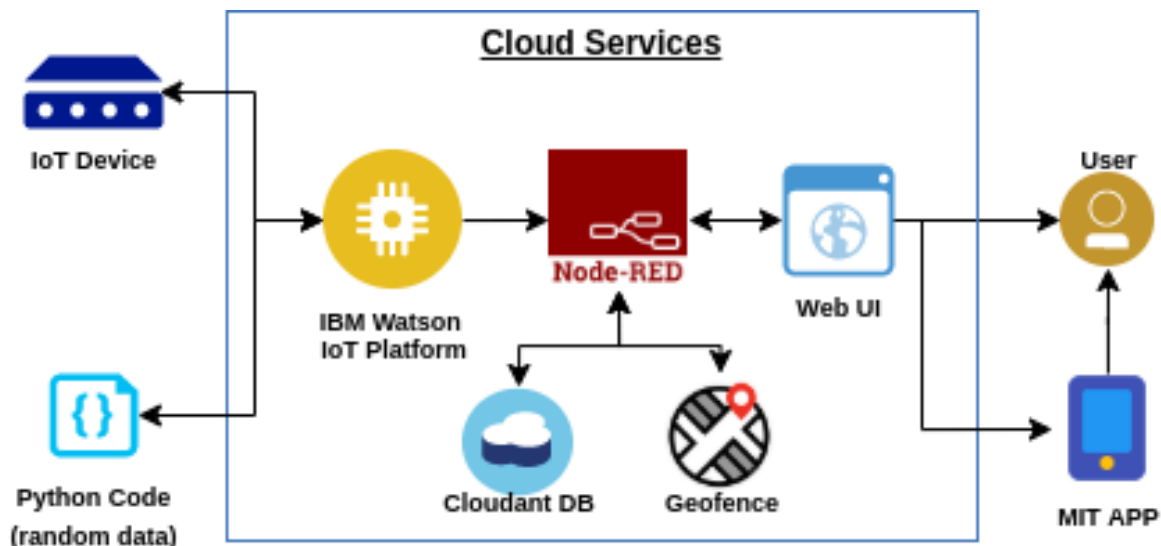
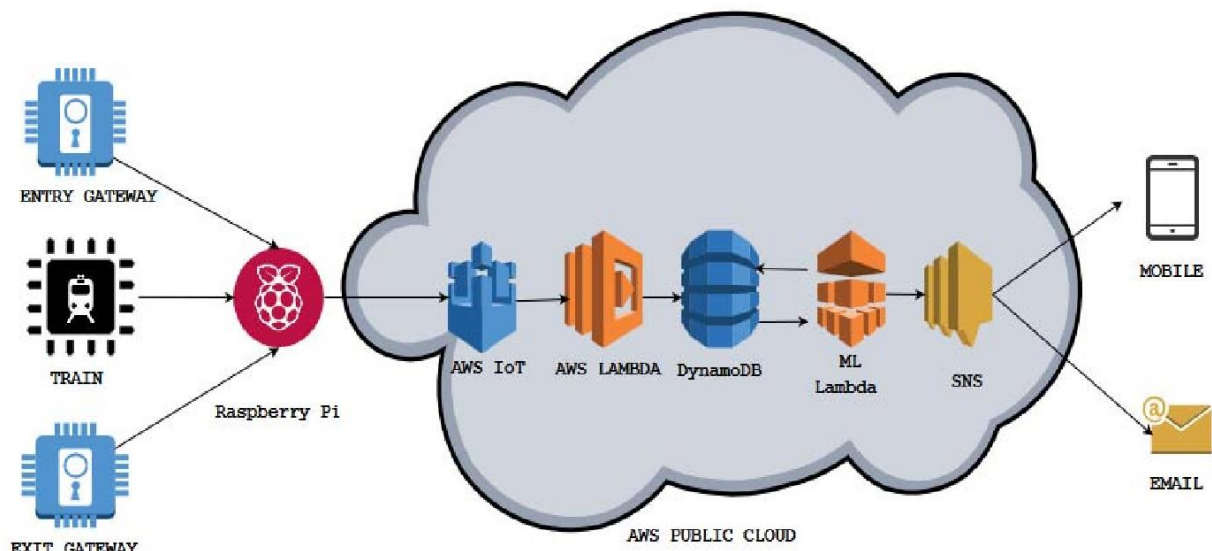


TECHNICAL ARCHITECTURE – SMART SOLUTION FOR RAILWAYS

Date	30 - September-2022
Team ID	PNT2022TMID41891
Project Name	Smart Solutions for Railways



Simulator commences the journey in four ways, when a day is



The IoT can interconnect all objects and devices that were previously not part of a network for predictive analytics. Its application increases safety, efficiency and ease of use with train management systems. Control and surveillance systems reduce the risk of collisions and regulate speed. Advanced consumer technologies help maximise connectivity and allow passengers to continue their activities on smart devices while travelling. Train-to-train communication through the cloud enables operators to transmit data about equipment, tracks and stations among themselves.

The IoT enables monitoring of areas on railway crossings remotely, such as barrier operations and end positions, switch end positions, space between barriers, system operations, connections and signals. This allows users to accelerate their projects, from engineering and runtime to maintenance with fast detection and localisation of errors and faults.

Here are some potential use cases presented by rail operators for using IoT to create a connected railway.

Sensors use a reaction-based approach to manage and maintain an asset and maximise its use potential. A wide range of sensors is available to collect huge amounts of data from all possible systems of a single train and then analyse it in real time to detect problems before these actually occur. Constant monitoring of equipment through the measuring of all relevant variables such as temperature, vibrations, oil levels and the like help anticipate the optimal timing for maintenance. It enables identification of faults proactively and elimination of necessary maintenance interventions. Predictive maintenance is a powerful tool that helps track asset health, reduce unplanned downtime of equipment and minimise the high cost of unscheduled maintenance. Optical and tactile sensors such as light curtains, camera systems and dynamic pressure-sensitive mats are suited to monitoring areas near rail vehicles. Good internal communication, fast reactions based on equipment geolocation data, high-quality maintenance planning and regular interventions are required to keep massive rail networks working.